



US 20170098749A1

(19) **United States**

(12) **Patent Application Publication**
PARK et al.

(10) **Pub. No.: US 2017/0098749 A1**

(43) **Pub. Date: Apr. 6, 2017**

(54) **THERMOELECTRIC STRUCTURE,
THERMOELECTRIC DEVICE AND METHOD
OF MANUFACTURING THE SAME**

Publication Classification

(51) **Int. Cl.**

H01L 35/16 (2006.01)

H01L 35/34 (2006.01)

H01L 35/10 (2006.01)

H01L 35/18 (2006.01)

(52) **U.S. Cl.**

CPC **H01L 35/16** (2013.01); **H01L 35/18**

(2013.01); **H01L 35/34** (2013.01); **H01L 35/10**
(2013.01)

(71) Applicants: **Samsung Electronics Co., Ltd.**,
Suwon-si (KR); **Research & Business
Foundation Sungkyunkwan
University**, Suwon-Si (KR)

(72) Inventors: **Seongjun PARK**, Seoul (KR);
Hyeonjin SHIN, Suwon-si (KR);
Sungwng KIM, Seoul (KR); **Eunsung
KIM**, Suwon-si (KR); **Jaeyeol
HWANG**, Suwon-si (KR)

(73) Assignees: **Samsung Electronics Co., Ltd.**,
Suwon-si (KR); **Research & Business
Foundation Sungkyunkwan
University**, Suwon-Si (KR)

(21) Appl. No.: **15/280,241**

(22) Filed: **Sep. 29, 2016**

(30) **Foreign Application Priority Data**

Oct. 1, 2015 (KR) 10-2015-0138612

(57)

ABSTRACT

A thermoelectric structure that may be included in a thermoelectric device may include a thin-film structure that may include a plurality of thin-film layers. The thin-film structure may include Tellurium. The thin-film structure may be on a substrate. The substrate may include an oxide, and a buffer layer may be between the substrate and the thin-film structure. The thermoelectric structure may be manufactured via depositing material ablated from a target onto the substrate. Some material may react with the substrate to form the buffer layer, and thin film layers may be formed on the buffer layer. The thin film layers may be removed from the substrate and provided on a separate substrate. Removing the thin-film layers from the substrate may include removing the thin-film layers from the buffer layer.

